

STAT

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TO:

		ACTION	INFO	DATE	INITIAL
1	DCI		X(w/o att)		<i>WRC</i>
2	DDCI				
3	EXDIR				
4	D/ICS				
5	DDI		X(w/o att)		
6	DDA				
7	DDO				
8	DDS&T				
9	Chm/NIC				
10	GC				
11	IG				
12	Compt				
13	D/OCA	X(w/att)			
14	D/PAO				
15	D/PERS				
16	D/Ex Staff				
17	D/OSWR/DT		X(w/o att)		
18					
19					
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22					
SUSPENSE		Date			

Remarks

D/OCA to respond over his signature.

*FLS*  
Executive Secretary

1 Jun 88

Date

3637 (10-81)

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From: John Helgerson

31 MAY 1988

☐ We plan to prepare an  
answer for your signature.

☒ We plan to prepare an  
answer for my signature.

☐ No answer expected or required

☐ John, I prefer to \_\_\_\_\_

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## Congress of the United States

## OFFICE OF TECHNOLOGY ASSESSMENT

WASHINGTON, DC 20510-8025

Executive Registry

88-2275X

May 27, 1988

The Honorable William H. Webster  
Director  
Central Intelligence Agency  
Washington, DC 20505

Dear Mr. Webster:

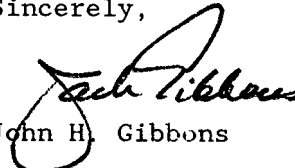
I am pleased to enclose OTA's Report, Seismic Verification of Nuclear Testing Treaties.

As you know, the debate over nuclear testing has many facets. Verification, however, is a central issue to the consideration of any treaty. The force of an underground nuclear explosion, like an earthquake, creates seismic waves that travel through the Earth. A seismic network must be able both to *detect* an underground nuclear explosion and to *distinguish* it from earthquakes and other sources of seismic waves. In the case of monitoring a treaty that limits testing below a certain size of explosion, the seismic network must also be able to *estimate the size* with acceptable accuracy. All of this must be done with an assured capability to defeat adequately any credible attempt to evade or spoof the monitoring network.

This Report analyzes the issues of detection, identification, yield estimation and evasion to address two critical questions: (1) Down to what size explosion can underground testing be seismically monitored with high confidence? and (2) How accurately can the yields of underground explosions be measured? To answer these questions, OTA assessed the contribution that could be made if seismic stations were located in the country whose tests are to be monitored, and other cooperative provisions that a treaty might include. These questions provide the technical information that lies at the heart of the political debate over: (1) Down to what yield can we verify Soviet compliance with a test ban treaty? (2) Is the 1976 Threshold Test Ban Treaty verifiable? and (3) Has the Soviet Union complied with present testing restrictions?

I hope you will find the Report useful and informative.

Sincerely,

  
John H. Gibbons

DCI  
EXEC  
REG